UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

April 23, 2012

Reply to attention of: SR-6J

Doyle Wilson
Illinois EPA
1021 North Grand Ave E
Springfield, IL 62702

Mr. Wilson,

The Eagle Zinc Superfund Site, located in Hillsboro, IL, is nearing the completion of the Remedial Investigation and Feasibility Study (RI/FS) stage. We have worked closely with your predecessor, Rick Lanham, and IEPA management to ensure the thorough and timely completion of the RI/FS activities. The proposed plan was sent out for review in late March 2012 to you and EPA Headquarters (HQ). The astute review by EPA HQ has brought to light a significant issue in our discussion of the class of groundwater at the site. The Human Health Risk Assessment, an appendix to the Supplemental Remedial Investigation report (February 2012), uses class I groundwater standards to assess the risk so as to be as conservative as possible. However, it is very unlikely that the groundwater onsite would ever be used as a potable water supply because of the low hydraulic conductivity of the silty clay soils onsite.

If we classify the groundwater as class I then we need to actively remediate the ground water to meet those conservative standards. Since, the current data suggests that the onsite shallow groundwater is class II, there is no need to meet the more stringent criteria. This message was not clearly communicated in the draft proposed plan, as pointed out by HQ, and it will need to be revised to more clearly present the groundwater classification and the corresponding risk. In order to support the class II groundwater classification, we have evaluated the groundwater data from the site against the Illinois groundwater classification criteria found in the Illinois Administrative Code, Title 35, Parts 620.210 through 620.240.

Groundwater Classification Analysis

The site geology consists of loess deposits of silt and clay with thicknesses of 0 to 20 feet. Beneath the loess is a relatively compact glacial till, present at a depth of 65 feet at MW-18. The base of the glacial till was not identified in the Supplemental Remedial Investigation, but the thickness of glacial till in Montgomery County ranges from 50 to 100 feet.

Manganese is the only contaminant at concentrations greater than Class I groundwater standards in the shallow groundwater below the residue (excluding sample results from wells that sample water from within the residue). Manganese is not present at concentrations greater than the Class I standard (0.15 milligram per liter [mg/L]) in the deepest groundwater (55 to 65 feet below ground) monitored at the site. The classification of groundwater as Class II at the site applies only to the shallow groundwater. The Illinois regulations are shown in italics below followed by an analysis of the requirement for the shallow groundwater at the Eagle Zinc Site in bold text.

Title 35 Part 620 Section 620.210 Class I: Potable Resource Groundwater

Except as provided in Sections 620.230, 620.240, or 620.250, Potable Resource Groundwater is:

a) Groundwater located 10 feet or more below the land surface and within:

1) The minimum setback zone of a well which serves as a potable water supply and to the bottom of such well;

The remedial investigation concluded that potable water supply wells are not located in close proximity to the site, and the area is served by a municipal water supply.

2) Unconsolidated sand, gravel or sand and gravel which is 5 feet or more in thickness and that contains 12 percent or less of fines (i.e., fines which pass through a No. 200 sieve tested according to ASTM Standard Practice D2488-84, incorporated by reference at Section 620.125);

None of the boring logs completed at the site indicate that a zone of 5 feet or more of sand, gravel, or sand and gravel is present.

3) Sandstone which is 10 feet or more in thickness, or fractured carbonate which is 15 feet or more in thickness; or

None of the boring logs completed at the site indicate the presence of sandstone in the area of groundwater contamination.

4) Any geologic material which is capable of a:

A) Sustained groundwater yield, from up to a 12 inch borehole, of 150 gallons per day or more from a thickness of 15 feet or less; or

B) Hydraulic conductivity of 1 x 10(-4) cm/sec or greater using one of the following test methods or its equivalent:

i) Permeameter;
ii) Slug test; or
iii) Pump test.

Site aquifer (slug) tests were performed on four monitoring wells as part of the former underground storage tank investigation and results indicated hydraulic conductivity in the shallow water bearing zone that ranged from 1.1 $\times 10^{-4}$ centimeters per second (cm/sec) to 8.5 $\times 10^{-5}$ cm/sec (Environ 2005). During the Supplemental Remedial Investigation, aquifer (slug) tests were performed on the newly installed monitoring wells (10 wells). Permeabilities

ranged from 5×10^{-4} cm/sec to 6×10^{-7} cm/sec. Seven of the 10 slug tests were less than 1×10^{-4} cm/sec. The geometric mean for the 10 wells tested is 3×10^{-5} cm/sec. The higher-permeability measurements from the three wells greater than 1×10^{-4} cm/sec likely represent thin (less than 3 feet), localized sand or silt lenses that are not laterally continuous. Overall, the permeability of the shallow groundwater at the Eagle Zinc Site does not meet the Class I requirement of 1×10^{-4} cm/sec or greater.

b) *Any groundwater which is determined by the Board pursuant to petition procedures set forth in Section 620.260, to be capable of potable use. (Board Note: Any portion of the thickness associated with the geologic materials as described in subsections 620.210(a)(2), (a)(3) or (a)(4) should be designated as Class I: Potable Resource Groundwater if located 10 feet or more below the land surface.)*

No petitions are known to have been filed for the site groundwater.

In summary, the shallow groundwater at the site does not meet the requirements for Class I Potable Resource Groundwater.

Section 620.220 Class II: General Resource Groundwater

Except as provided in Section 620.250, General Resource Groundwater is:

a) *Groundwater which does not meet the provisions of Section 620.210 (Class I), Section 620.230 (Class III), or Section 620.240 (Class IV).*

See below—The shallow groundwater is a Class II General Resource Groundwater because it does not meet the Class I, Class III, or Class IV requirements.

c) *Groundwater which is found by the Board, pursuant to the petition procedures set forth in Section 620.260, to be capable of agricultural, industrial, recreational or other beneficial uses.*

Section 620.230 Class III: Special Resource Groundwater

Except as provided in Section 620.250, Special Resource Groundwater is:

a) *Groundwater that is determined by the Board, pursuant to the procedures set forth in Section 620.260, to be:*

1) *Demonstrably unique (e.g., irreplaceable sources of groundwater) and suitable for application of a water quality standard more stringent than the otherwise applicable water quality standard specified in Subpart D; or*

2) *Vital for a particularly sensitive ecological system.*

The site shallow groundwater is not considered demonstrably unique or vital to a sensitive ecological system.

b) *Groundwater that contributes to a dedicated nature preserve that is listed by the Agency as set forth below:* (Note that items 1 through 3 are not included here for brevity.)

A nature preserve has not been listed for the site.

Section 620.240 Class IV: Other Groundwater

Except as provided in Section 620.250, Other Groundwater is:

a) Groundwater within a zone of attenuation as provided in 35 Ill. Adm. Code 811 and 814;

A zone of attenuation has not been requested.

b) Groundwater within a point of compliance as provided in 35 Ill. Adm. Code 724, but not to exceed a distance of 200 feet from a potential primary or secondary source.

A point of compliance has not been requested.

c) Groundwater that naturally contains more than 10,000 mg/L of total dissolved solids;

Groundwater contains less than 10,000 mg/L total dissolved solids.

d) Groundwater which has been designated by the Board as an exempt aquifer pursuant to 35 Ill. Adm. Code 730.104; or

Groundwater has not been designated as exempt.

e) Groundwater which underlies a potential primary or secondary source, in which contaminants may be present from a release, if the owner or operator of such source notifies the Agency in writing and the following conditions are met:(Note that items 1 through 5 are not included here for brevity.)

A request for a Class IV designation is not planned.

f) Groundwater which underlies a coal mine refuse disposal area not contained within an area from which overburden has been removed, a coal combustion waste disposal area at a surface coal mine authorized under Section 21(s) of the Act, or an impoundment that contains sludge, slurry, or precipitated process material at a coal preparation plant, in which contaminants may be present, if such area or impoundment was placed into operation after February 1, 1983, if the owner and operator notifies the Agency in writing, and if the following conditions are met: (Note items 1 through 5 are not included here for brevity)

The shallow groundwater does not underlie a coal mine refuse disposal area, etc.

g) Groundwater within a previously mined area, unless monitoring demonstrates that the groundwater is capable of consistently meeting the standards of Sections 620.410 or 620.420. If such capability is determined, groundwater within the previously mined area shall not be Class IV.

The shallow groundwater is not within a previously mined area.

In summary, none of the requirements for Class IV groundwater are applicable to the shallow groundwater at the site.

In order to formally document this classification we are requesting a letter from IEPA agreeing to this classification for the purposes of finalizing the proposed plan and record of decision (ROD). We understand that additional groundwater information will be necessary to ensure that the groundwater classification is well supported and documented. This groundwater monitoring

is part of all of the proposed remedial actions. The groundwater will be monitored quarterly and the data will be sent to IEPA for review. If any of the data suggests that additional remedial measures should be taken at the site, the appropriate actions will be taken to ensure the protection of human health and the environment. In order to keep the project on schedule, please submit a letter to EPA within 15 days of receipt of this letter. We appreciate your dedication to getting this site cleaned up in an effective and efficient manner. Please contact me as soon as possible, if you have any questions or concerns.

Sincerely,

Nefertiti DiCosmo

cc: Ajit Vaidya, U.S. EPA
Clarence Smith, IEPA